

Y. Lee et al.  
U.S. Serial No. 10/635,245  
Page 5 of 7

REMARKS

Claims 1-8, 10-18, and 20 are pending in the application. Independent claims 1 and 11 have been amended by the present amendment. The amendments are fully supported by the application as originally filed.

Claims 1 and 11 were objected to because of the language "a hollow-out area is formed between the first ground portion and one of the tie bars." Independent claims 1 and 11 have been amended to recite "a hollow-out area is formed between the first ground portions," as described in the specification (see, e.g., page 8, third paragraph of specification). It is believed that this amendment overcomes the claim objections.

As amended, independent claims 1 and 11 recite a ground-enhanced semiconductor package and a lead frame, respectively, in which the lead frame includes a "plurality of ground structures surrounding the die pad," where the ground structures "are separated from each other" (see, e.g., specification at page 7, last paragraph to page 8, first paragraph; *see also* FIG. 1, depicting four separate ground structures).

Claims 1, 3-6, 8, 11, 13-16, and 18 were rejected under 35 USC 102(e) as being anticipated by U.S. Patent Application Publication US 2004/0061205 to Han et al. (hereinafter "Han"). Claims 2, 7, 10, 17, and 20<sup>1</sup> were rejected under 35 USC 103(a) as being unpatentable over Han. These rejections are respectfully traversed.

Han does not teach or suggest a semiconductor package or lead frame in which a plurality of ground structures surround a die pad, and the ground structures are separated from each other, as recited in independent claims 1 and 11.

<sup>1</sup> Claim 12 was not listed as being among the claims rejected under 35 USC 103(a) over Han (see Office Action of 10/20/2006 at page 5, paragraph #4). However, in the next paragraph, the sentence begins with: "Regarding claims 2 and 12..."

Y. Lee et al.  
U.S. Serial No. 10/635,245  
Page 6 of 7

On page 3 of the Office Action of 10/20/2006, a bonding ring 104 of Han was cited as allegedly corresponding to the claimed "ground structure," and major extents 122 of Han were cited as allegedly corresponding to the claimed "first ground portions."

As indicated in paragraph 0038 of Han, the major extents 122 constitute portions of the bonding ring 104.

Therefore, if the bonding ring 104 is considered a "ground structure," only one such ground structure is shown in Han (see, e.g., bonding ring 104 in FIG. 1 of Han).

Moreover, in Han, the major extents 122 are connected to each other via open rings 116 and necks 120 (see, e.g., paragraphs 0037-0038 and FIG. 1 of Han). Thus, the major extents 122 and other components of the bonding ring 104 form a continuous ring structure.

However, as amended, independent claims 1 and 11 recite a lead frame having a plurality of ground structures, where the ground structures are separated from each other. As described in the "Background of the Invention" section of the application, the disadvantages of continuous ring structures such as those disclosed in Han are specifically overcome by the Applicants' claimed invention.

In other words, the continuous ring structure disclosed in Han can suffer from the drawbacks described on page 3 of the application (see "Background of the Invention"). Prior art continuous ring structures can be easily deformed in high-temperature conditions such as die bond curing, wire bonding and molding processes, and reliability tests; other drawbacks are described on page 3, second paragraph of the application.

For at least the reasons discussed above, the Han reference does not anticipate or otherwise render obvious the Applicants' claimed invention. Therefore, independent claims 1 and 11 and their respective dependent claims are patentable over Han.

Y. Lee et al.  
U.S. Serial No. 10/635,245  
Page 7 of 7

It is believed the application is in condition for immediate allowance, which action is  
earnestly solicited.

Respectfully submitted,



Peter F. Corless (Reg. No. 33,860)  
Steven M. Jensen (Reg. No. 42,693)  
Edwards Angell Palmer & Dodge  
P.O. Box 55874  
Boston, MA 02205

Date: January 22, 2007

Phone: (617) 439-4444

Customer No. 21874